

CIRCULATION COPY
SUBJECT TO RECALL
IN TWO WEEKS

UCRL- 94482
PREPRINT

THE Be-Cd (BERYLLIUM-CADMIUM) SYSTEM

H. Okamoto
L. E. Tanner

This paper was prepared for submittal to
Bulletin of Alloy Phase Diagrams

April 18, 1986

Lawrence
Livermore
National
Laboratory

This is a preprint of a paper intended for publication in a journal or proceedings. Since changes may be made before publication, this preprint is made available with the understanding that it will not be cited or reproduced without the permission of the author.

DISCLAIMER

This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor the University of California nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the University of California, and shall not be used for advertising or product endorsement purposes.

The Be-Cd (Beryllium-Cadmium) System
9.01218 112.41

By H. Okamoto and L.E. Tanner
Lawrence Livermore National Laboratory

Information about the Be-Cd system was given by [60Kle] and [60Yan] as cited by [65Ell]. No additional data have been reported since.

Cd was not retained in α Be solid solution [60Kel] ($<<0.01$ at.% at 800°C [60Yan]). The melting point of β Be and the β Be \rightarrow α Be allotropic transformation temperature are 1289 ± 4 and $1270\pm6^\circ\text{C}$, respectively [85BAP]. The melting point of Cd is 321.108°C [81BAP].

A summary of crystal structure and lattice parameter data for pure elements is given in Table 1.

Cited References

- 60Kle: J. Klein, L. Perelman, and W.W. Beaver, "Development of Wrought Beryllium Alloys of Improved Properties," WADC Tech. Rept. 58-478, pt. II, 24 and 110, Sept. (1960). (Equi Diagram; Experimental)
- 60Yan: F.M. Yans, "A preliminary Investigation of the Beryllium-Zinc Binary System," U.S. At. Energy Comm. NMI-1240, 41pp (1960). (Equi Diagram; Experimental)
- 65Ell: R.P. Elliott, Constitution of Binary Alloys, First Supplement, McGraw-Hill, New York or General Electric Co., Business Growth Services, Schenectady, NY 12345 (1965). (Equi Diagram; Compilation)
- 81BAP: "Melting Points of the Elements", Bull. Alloy Phase Diagrams, 2(1), 145-146 (1981). (Equi Diagram; Compilation)
- 85BAP: to be published in Bull. Alloy Phase Diagrams (1985). (Equi Diagram; Compilation)

Acknowledgments

Be-Cd evaluation contributed by L.E. Tanner, L-217, Lawrence Livermore National Laboratory, P.O. Box 808, Livermore, CA 94550 and H. Okamoto, B77G, Lawrence Berkeley Laboratory, Berkeley, CA 94720. Work was supported by the U.S. Department of Energy under contract no. W-7405-Eng-48 and American Society for Metals (ASM). Literature searched through 1984. Part of the bibliographic search was provided by ASM. L.E. Tanner and H. Okamoto are ASM/NBS Data Program Category Editors for binary beryllium alloys.

Table 1 Be-Cd Crystal Structure and Lattice Parameter Data

Phase	Composition,		Struktur-		Space	Proto-	Lattice	
	at.%	Cd	Pearson	bericht			parameters, nm	
			symbol	designation	group	type	a	c
(β Be)....	0		cI2	A2	Im3m	W	0.25515	...
(α Be)....	0		hP2	A3	P6 ₃ /mmc	Mg	0.22857	0.35839
(Cd).....	100		hP2	A3	P6 ₃ /mmc	Mg	0.29788	0.56167